

## MODERN DAY PIONEERS

August 3rd marked the announcement of the TRS-80 Microcomputer System at a press party in New York City. The over 200 members of the press and the security analyst who attended the formal introduction of Radio Shack into microcomputers were very encouraging. They confirmed our own internal feeling that the market desired a fully wired, modular unit—not a kit—that was ready to use. The order response has been very encouraging and we are indeed grateful to you modern day pioneers who are willing to buy this exciting product—sight unseen in most cases. This reflects the customer confidence in the name RADIO SHACK, and the products we sell. This is not the first time we have been encouraged by new introductions. Just a year ago we introduced our STA-2000 stereo receiver at 75 watts per channel and found it an instant success and just like the TRS-80 it was totally engineered and manufactured by Radio Shack.

The TRS-80 is not our only microcomputer product; our PRO-2001 scanner includes both microprocessor and memory to enable you to search over 16,000 frequencies. Incidentally, V games are a type of microprocessor.

As pioneers in low cost computing, I'm sure we'll all learn some things together but Radio Shack is committed to bring you low-cost peripherals to go

with our low-cost system and back it up with service and software. It is now our job to help the mass market have the benefit of the most exciting scientific development since World War II—the computer. It helped put man on the moon and now all people are going to have the opportunity to utilize its vast powers. Here we go—a giant step forward!

### Serious Questions for Computer Users!

Many of you reading this newsletter have already placed your order for our exciting, new TRS-80 computer system. Whether you have placed your order, are awaiting future peripherals and software, or are just interested in computers, you should ask yourself the same type of questions that users of big systems ask themselves.

#### Q. Does the system have the capacity for the task I plan to do?

A. If you are using our application packages, the answer will normally be yes. If you are preparing a special program, many questions must be considered such as length of time required to input data, how long will it take to retrieve data from the storage medium, is the amount of memory and storage adequate, how long will it take to run the program each time, etc. For inexperienced users, we recommend you add one application at a time, check your

results carefully so you know they are right, and don't expect the computer to perform miracles.

#### Q. What happens if my computer goes down?

A. Take the system directly to our store and they will have the p.c. board changed out in our repair center.

#### Q. What happens to my situation if the computer should go down?

A. Although we hope your down time will be minimal, smart computer users plan ahead! The alternatives include taking the system directly to our repair center and have the p.c. board changed out, buying a back-up system (our low cost may make this more practical than in many historical situations), know the owners of several other TRS-80 systems in your area whom you can swap time with, make arrangements to use the system at our store (most stores will eventually have one), and/or have an adequate manual back-up so that being down doesn't cause a problem.

#### Q. Will I be able to utilize the application software programs offered by Radio Shack?

A. Yes and no. You most likely can use them if you are willing to adapt your internal procedures to use them but historically most computer users have wanted to maintain their historical way of doing things. Therefore, you in some cases may want to modify our programs or write your own.

These questions are absolutely not intended to discourage anyone but rather encourage you to carefully think about your computer usage so that you are a happy user.

**Garbage In - Garbage Out** — Don't forget computer users learned a long time ago if you put in incorrect data, leave part of the data out, put data in the wrong places, or use the wrong cassette that more than likely you'll just speed up the mess. Computers do offer a discipline to the user that can insure things are done the same way every time but they don't perform miracles—they only do as they are told (programmed).



### TRS-80 Consumer Systems Personal Finance

**BASIC has arrived!!! A simple, straightforward language living in the world's first affordable computer — the TRS-80.**

The LEVEL-I BASIC supplied with the machine has the power to solve many business and consumer problems, yet the commands are easy to understand. Consequently, you can modify any RADIO SHACK program to suit your individual needs.

In fact, we would like to share your modifications with other TRS-80 owners through this newsletter. So if your mods work most of the time, send them in for publication.

A LEVEL-II BASIC is now being developed. This will be a 12K BASIC with every feature you ever imagined — PEEK and POKE, PRINT USING, transcendental functions, advanced string handling, etc. It should be available on ROM soon.

When you upgrade your machine to 8 or 16K, you will be able to use our EDITOR/ASSEMBLER for assembly language coding. This should be available in December. So much for system software. What can you do with your machine?

Four software packages are available now. The PAYROLL SYSTEM provides two programs: Payroll Update



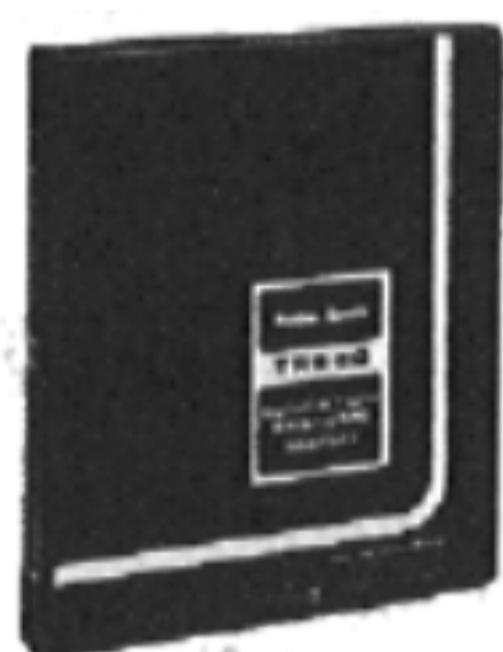
### TRS-80 Business Systems Payroll

and Payroll Checks. The Update performs three functions:

1. Creates an employee file
2. Adds new employees to an existing employee file
3. Summarizes year-to-date wages and taxes. This is used for W-2's and 914's.

The Checks program allows you to enter the hours worked, calculates Federal, FICA, State, and City taxes, and computes net pay. It also tracks quarter and year-to-date earnings and taxes for each employee. The instruction manual contains a third program which you may type in yourself. This program is known as a fixer. It allows you to correct any bad field on the employee file — very helpful and it's only about 25 lines long. Six blank tapes are also included for use as employee files.

The Personal Finance system contains four programs and three blank tapes. The Checkbook Initialization program creates a Data Tape containing balance and outstanding checks. The Checkbook Balancing program, in addition to doing what the name implies, creates a Data Tape containing cancelled checks which is input to the third program — the Monthly Budget program. It, in turn, provides a complete monthly profit and loss statement on your personal finances. The fourth



### TRS-80 Education Systems Math-1

is the Budget Summary which creates tabular listing of all expense categories for any time period. This is the key to easy Income Tax reporting.

Math-1 is a basic math facts educational primer designed by a local teacher using a previously proven technique. It begins with the most basic fundamentals of addition and subtraction and proceeds through multiplication and division tables. An evaluation test program is also included for progress measurement.

Recipe Conversion/Message Center is a two-program tape. One program is a generalized conversion system capable of changing recipes from one number of servings to another, metric conversion, etc. The Message Center program uses the video screen as an all purpose bulletin board.

Whether you are using software written by RADIO SHACK or are writing your own, there are several things that you should do. You must familiarize yourself with the program and run adequate tests to insure yourself.

Several new programs are planned for December. They include a Quick Reference Inventory program, an instruction course in BASIC (supplementing the Owner's manual), a space game and Algebra I.

# Radio Shack® TRS-80 MICROCOMPUTER SYSTEM

For Home, Business, Office, Education



Due to the overwhelming response, technical questions cannot be answered individually. However, most of the 50,000 letters we have received contain one or more of the following questions. We hope the answers that follow will satisfy your immediate information needs.

#### Can I use a regular TV set as a video monitor?

Not unless major modifications are performed. A standard TV set has lower bandwidth and less resolution than a video monitor. The video output from the computer is 75 ohm, 1.4 volt peak to peak, non-interlaced with a 6MHz bandwidth.

#### Are upper and lower case provided?

During initial design we had a choice between lower case and graphics. We chose graphics even though the character generator does have lower case capabilities. Minor hardware and software mods could eliminate graphics and provide lower case letters.

#### Are there a serial and parallel ports?

I/O ports (RS232, TTY, etc.) will be

available after the first of the year as assembled boards which plug into our soon-to-be-announced expansion box.

#### What cassette standard do you use?

We have used a method very similar to that used with floppy disks. It is unlike anything on the market and very, very reliable. Most cassette recorders will work but automatic level control is essential. The transfer rate is about 250 baud, not 500 as stated in earlier literature.

#### How many peripherals will it support?

Theoretically 256, but because of line driver restrictions, 16 is the practical limit.

#### What are the specifications on the expansion box?

It will be a 5-slot motherboard, with a 7-8 amp power supply. We have decided not to go S-100 because we can build our own more efficient bus at a lower cost and pass the savings on to you, the consumer — a Radio Shack tradition. Some of the cards we plan to offer include: Extra memory 8K & 16K; Color graphics; D/A converters; RS 232 interface-serial and parallel ports; MODEM; second cassette interface.

#### What's planned for expansion?

Our plans for expansion include additional memory, DA converters, RS-232 interface for serial and parallel ports, modem, second cassette interface and more.

#### When will LEVEL-II BASIC be available?

LEVEL-II BASIC, described earlier in this newsletter, will be introduced around the end of the year. It is required for a printer or disk.

#### What do I do if I need repair?

The entire unit, including the packaging material, should be returned to your nearest store. The store will send all or part of the system to the nearest repair center (there are 55 from coast-to-coast). The repair centers will normally make board replacements and return your unit promptly. Do not attempt to repair the unit yourself because you will invalidate your warranty. All computers, monitors and tape recorders are warranted for 90 days against defects in material and workmanship. Be sure to read your warranty.

#### When will a printer be available?

A dot-matrix impact head printer with a speed of 60 to 110 cps over an 80 to 132 column field will be introduced around the first of the year. It is friction feed and will be priced around \$1500. A less expensive "hobbyist" printer will be introduced later. Printers require LEVEL-II BASIC. Watch your Newsletter.

#### When will a disk be available?

A mini-floppy 5 1/4" disk will be announced after the first of the year. Storage capacity of the disk is about 80K bytes. Disk requires LEVEL-II BASIC.

#### Are schematics available?

A service manual including schematics and timing will be available for sale sometime next year. Watch your Newsletter.

Watch this column for what users have done with the TRS-80 and also for enhancements to our application programs.

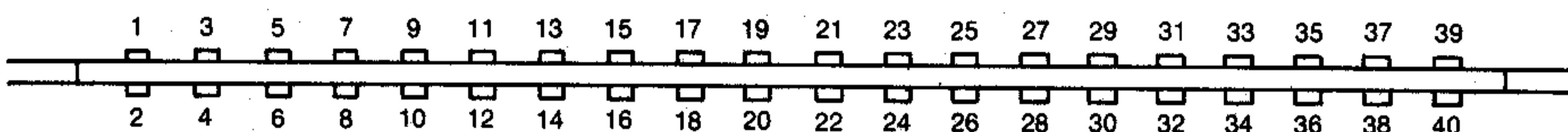
If you have some software that you think would be suitable for sale to all our users send information to:

Software Manager  
TANDY ADVANCED PRODUCTS  
205 NW 7th Street  
Fort Worth, TX 76106

**IF UNDELIVERABLE DO NOT RETURN**

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**Mates with AMP P/N 88103-1 Card  
Edge Connector or Equivalent**



**View Looking Into Back of Computer**

P/N	SIGNAL NAME	DESCRIPTION
1	RAS*	Row Address Strobe Output for 16 Pin Dynamic Rams
2	SYSRES*	System Reset Output, Low During Power Up Initialize or Reset Depressed
3	CAS*	Column Address Strobe Output for 16 Pin Dynamic Rams
4	A10	Address Output
5	A12	Address Output
6	A13	Address Output
7	A15	Address Output
8	GND	Signal Ground
9	A11	Address Output
10	A14	Address Output
11	A8	Address Output
12	OUT*	Peripheral Write Strobe Output
13	WR*	Memory Write Strobe Output
14	INTAK*	Interrupt Acknowledge Output
15	RD*	Memory Read Strobe Output
16	MUX	Multiplexor Control Output for 16 Pin Dynamic Rams
17	A9	Address Output
18	D4	Bidirectional Data Bus
19	1N*	Peripheral Read Strobe Output
20	D7	Bidirectional Data Bus
21	INT*	Interrupt Input (Maskable)
22	D1	Bidirectional Data Bus
23	TEST*	A Logic "φ" on Test* Input Tri-States Aφ-A15, Dφ-D7, WR*, RD*, IN*, OUT*, RAS*, CAS*, MUX*
24	D6	Bidirectional Data Bus
25	Aφ	Address Output
26	D3	Bidirectional Data Bus
27	A1	Address Output
28	D5	Bidirectional Data Bus
29	GND	Signal Ground
30	Dφ	Bidirectional Data Bus
31	A4	Address Bus
32	D2	Bidirectional Data Bus
33	WAIT*	Processor Wait Input, to Allow for Slow Memory
34	A3	Address Output
35	A5	Address Output
36	A7	Address Output
37	GND	Signal Ground
38	A6	Address Output
39	+5V	5 Volt Output (Limited Current)
40	A2	Address Output

NOTE: \* means Negative (Logical "φ")  
True Input or Output